2001 WOOD RIVER WETLAND ANNUAL MONITORING REPORT

Restored Wood River Channel

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Project Time Line

This project is designed to restore approximately 3,000 acres of wetland habitat and 2.5 miles of river channel. The Bureau of Land Management's (BLM) project goals include improved water quality and quantity, and improved habitat for two endangered fish species, as well as other wildlife. The money spent in FY 2001 went for final construction and monitoring of the second and third phases of project plan implementation.

Phase 1 components:

a) Construction of 2 miles of levee and associated water control structures.
b) Creation of two ponds in the northeast corner of the property.
c) Replacement of an existing pump station.
d) Design of a new drainage system to emulate original stream courses across the property.
e) Reconstruction of 0.5 mile of existing levee.

Ducks Unlimited completed construction of the new pump station in September 1996. In July of 1997, Ducks Unlimited completed two miles of levee construction (approximately 65,000 cubic yards of material), installed four new water control structures (full-round risers with screw gates and flashboards, and created two ponds (approximately 20 acres total). In 2001 Ducks Unlimited in partnership with Rocky Mountain Elk Foundation contributed approximately $20,000 in engineering and contract labor to improve nesting and brood rearing habitat for waterfowl and shorebirds. The U.S. Fish and Wildlife Service contributed labor and equipment to create 6 miles of meandering drainage channels and repair 0.5 mile of existing levee in August of 1997.

Phase 2 components:

a) Reconstruction of a levee for 1.8 miles with 60,000 cubic yards of material across the middle of the project area.
b) Construction of two settling ponds in front of the two pump stations to serve as final treatment for water to be pumped from the property.
c) Installation of three water control structures associated with this middle levee and ponds were completed in February 1998.
d) Installation of four water control structures by June 1998.

Phase 3 components:

Oregon Trout is the lead partner providing technical and financial support to restore the lower 1.8 miles of the Wood River to its historic form and function, from the confluence of Crooked Creek south to the dike road bridge. Construction of this project began in September of 1997, with the stockpiling of materials and creation of approximately two acres of wetland habitat. Approximately 40% of the construction work was completed in 1998. The remainder of this work was completed in 1999. This phase of the project is designed to improve refugial habitats

for the early life stages of endangered suckers, fish passage, and instream habitat for trout, and provide a wider flood plain with improved riparian and wetland habitat for waterfowl and neotropical migrant birds.

The restoration of a 3,300 foot section of historic channel south of the dike road bridge, was completed in January of 2001. The design of this portion of the project was modified, during implementation, to include two hydraulic grade control structures. These structures were constructed by placing fill material in two side channels downstream of the Dike Road bridge. Additional rock was added to maintain one of these structures in January of 2002. The restoration of this delta stream channel could greatly improve refugial habitat for fish and water quality in the northeast portion of Agency Lake.

Phase 4 components:

The final phase of the Wood River Wetland restoration project will be to develop a more sinuous and diverse interface along Sevenmile Canal. This would involve a two-mile reach of existing levee. This phase of the project will provide improved refugial habitat for larval and juvenile fish, as well as improved nesting and brood-rearing habitat for waterfowl and neotropical migrant birds. Potential partners include Ducks Unlimited, Oregon Trout, Water for Life, U.S. Fish and Wildlife Service, Trout Unlimited, and the Bureau of Reclamation. Studies are underway to examine the feasibility of this portion of the project.

Partners

We would like to express our thanks to a diverse group of partners, committed to restoring the Klamath Basin Ecosystem. To date, Federal partners are Klamath Basin Working Group, Bureau of Land Management, U.S. Fish and Wildlife Service (Klamath Basin Refuges), Klamath Basin Ecosystem Restoration Office, National Fish and Wildlife Foundation, Winema National Forest, U.S. Forest Service Redwood Sciences Lab, the Bureau of Reclamation, U.S. Geological Survey, and U.S. Environmental Protection Agency.

Non federal partners to date are American Lands Conservancy, Ducks Unlimited, Oregon Trout, Oregon Watershed Enhancement Board, Oregon Department of Transportation, Oregon Department of Environmental Quality, The Klamath Tribes, The Nature Conservancy, Jim Root Ranch, The Rocky Mountain Elk Foundation, The Usual Suspects, Oregon Department of Fish and Wildlife, Oregon State University Extension Service, Klamath Basin Audubon Society, Oregon Institute of Technology, Henley High School, Lost River High School, Tulelake High School, Butte Valley High School, Chiloquin Elementary School, and Oregon Wetlands Joint Venture.

More information about this project is available by contacting Wedge Watkins at the Klamath Falls Resource Area (541) 885-4110, or email wwatkins@or.blm.gov.

Waterfowl

Historic Management

From 1985 through 1994, this property was managed as irrigated pasture land for beef cattle production. Under this management objective, the mode of operation was as follows. Water that had accumulated on the property over the winter would be pumped off beginning in February or March. Pumping would continue until the property was without surface water except in the drainage canals. This condition was usually achieved by approximately May 1. Cattle were trucked into the ranch beginning in April and turned out on the north half of the property. Approximately 1,300 cow/calf pairs grazed the property through November with some variation in these dates due to weather. Irrigation of the property was usually conducted during July, August and September. Under this management scenario, open water was limited to a few areas that were not grazed in the previous year. Spring and fall forage for migrating geese was abundant. Vegetation on the property was dominated by grasses, sedges and weeds.

Recent Management

1995 was the first year that the property was not managed for cattle grazing. Water that accumulated during the winter remained on the property throughout the growing season. Irrigation water was added to the property in September, prior to the waterfowl hunting season. The response to this new management from waterfowl was dramatic, with total waterfowl numbers in excess of 100,000. The property was drained to facilitate construction work during the period of 1996-1998.

Field Observations in 1998

Waterfowl and shorebirds appeared to respond well to the water management in 1998. Goose production appeared to be improved over 1997. In 1998, an attempt was made to quantify duck production for the first time. The brood count conducted during August was impressive both in the number of birds and in the variety of species observed with broods.

The acquisition of approximately 7,000 acres to the west of Wood River Wetland by the Bureau of Reclamation (BOR) greatly influenced waterfowl during 1998. Because of the timing of the acquisition, the BOR property was not grazed during 1998. In fact, it was flooded with approximately 18 inches of water throughout the summer and fall. This provided excellent habitat for resident and migrating waterfowl, with peak numbers exceeding 300,000 birds.

Field Observations in 1999

Despite a cool wet spring that delayed plant growth as well as waterfowl nesting, waterfowl broods observed in August seemed to indicate increased brood production (see Tables 1 and 2) The diversity of habitats available for waterfowl and shorebirds was good and should continue to increase over the next several years. A nesting colony of white-faced ibis (approximately 100 nesting pair) was observed for the first time. Other birds observed nesting include black-necked

stilts, common snipe, Sandhill cranes, Virginia rail, yellow rail, and black terns. The overall number of species using the property in 1999 increased slightly over past years, but the overall numbers of waterfowl was less than in 1998 and significantly less than 1995. Waterfowl habitat, around Agency Lake, has greatly improved, as the result of other restoration efforts (Tulana Farms and Agency Lake Ranch). This improved habitat has also changed waterfowl distribution.

A longer period of inundation, along with a cold wet spring, resulted in a change in vegetation and use by waterfowl. While no far-reaching conclusions can be drawn from this limited data, the ability of both vegetation and waterfowl to respond to changes in water management on the property has already been demonstrated. Wetland Managers now have the ability to flood each half of the property to different water depths. This should greatly increase management options and habitat effectiveness. BLM Managers hope to see waterfowl use and numbers responding to this new management during 2000.

Field Observations in 2000

An early and relatively mild spring set the stage for an excellent waterfowl production year. Waterfowl broods observed in August indicate that brood production doubled for the second consecutive year (see Tables 1, 2and 3). The diversity of habitats available for waterfowl and shorebirds was good, and should continue to increase over the next several years. A nesting colony of white-faced ibis (approximately 100 nesting pair) was observed for the second year. Other birds observed nesting include black-necked stilts, common snipe, Sandhill cranes, Virginia rail, and black terns. The overall number of species using the property in 2000 remained similar to past years. The overall peak numbers of waterfowl increased slightly in the spring (19,280 in 99 vs. 20,900 in 2000) and decreased in the fall (22,200 in 99 vs. 14,030 in 2000). Fall waterfowl numbers were lower throughout the basin in 2000, and the majority of the property was frozen over from November 20th through December. These peak numbers were less than in 1998 and significantly less than 1995. Waterfowl habitat, around Agency Lake, has greatly improved, as the result of other restoration efforts (Tulana Farms, Agency Lake Ranch). This improved habitat has also changed waterfowl distribution.

Field Observations in 2001

A mild and dry winter of 2000-2001 resulted in lower than normal water levels at Wood River Wetland. Because of the water crisis experienced throughout the basin during the summer of 2001, a decision was made to manage the wetland by mimicking the natural hydrograph (drought). This resulted in most of the wetland (2500 acres) being dry by August 1, 2001. As expected waterfowl brood numbers were low (Table 4), reflecting the limited available habitat. Production for other water birds (grebes /coots/terns/black necked stilts) was also lower than in past years. White-faced ibis, production appeared to be slightly less than in 2000. The property was flooded again in early October, with water levels increasing through out the winter months.

Table 1. Brood Count Data 8/4/98		
Species	**Total Young**	**Misc. Notes**
Gadwall	541	Many Gadwall hens were still on nests
Cinnamon Teal	174	
Mallard	84	Several mallard broods were already able to fly, and were
Shoveler	19	
Ruddy Duck	19	
Ring-necked	14	
Scaup	14	
Coot	4	
Horned Grebe	2	
Eared Grebe	2	
Total	**873**	

Table 2. Brood Count Data 8/5/99			
Species	**Total young counted**	**Number of broods**	**Avg. young per brood**
Cinnamon Teal	500	60	8.3
Gadwall	492	62	7.9
Mallard	97	13	7.5
Shoveler	66	9	7.3
Eared Grebe	38	25	1.5
Ringneck	34	6	5.6
Greenwing teal	28	5	5.6
Widgeon	8	1	8
Ruddy Duck	8	2	4
Wood Duck	6	1	6
Scaup	3	1	3
Coot	35	unknown	unknown
Total	**1324**	**188**	**6.9**

Table 3. Brood Count Data 8/2000			
Species	**Total young counted**	**Number of broods**	**Avg. young per brood**
Cinnamon Teal	1339	173	7.7
Gadwall	1212	136	8.9
Mallard	308	37	8.3
Shoveler	4	27	6.7
Eared Grebe	117	73	1.6
Pied Bill Grebe	18	10	1.8
Ringneck	8	2	4
Greenwing teal	70	14	5
Widgeon	26	5	5.2
Ruddy Duck	23	5	4.6
Pintail	81	10	8.1
Scaup/Redhead	8	3	2.6
Coot	252	65	3.9
Total	**3,466**	**560**	**6.2**

Table 4. Brood Count Data 8/2001			
Species	**Total young counted**	**Number of broods**	**Avg. young per brood**
Cinnamon Teal	270	56	4.8
Gadwall	247	42	5.9
Mallard	35	9	3.9
Widgeon	32	4	8
Shoveler	6	1	6
Pintail	15	3	5
Ruddy Duck	1	1	1
Ringneck	6	1	6
Wood Duck	4	1	4
Bufflehead	4	1	4
Total	**620**	**119**	**5.2**
Two adult white fronted geese, and two adult hooded mergansers were also observed during the survey			

The long term management strategy for Wood River Wetland includes having longer periods of inundation. In general the north half of the property will be managed for seasonal wetland habitats, and the south half of the property will be managed to provide a more permanent marsh/open water habitat. While no far-reaching conclusions can be drawn from this limited data, the ability of both vegetation and waterfowl to respond to changes in water management on the property has already been demonstrated. BLM expects that waterfowl production will continue to increase as cover increases. We expect that spring and fall peak use of the property by migrating waterfowl will remain in the 15,000 - 30,000 range. Periodic flights have been made over the property during the past nine years (except May-August) by the U.S. Fish and Wildlife Service. Results of those flights are displayed in Table 5.

Table 5. Total Waterfowl (Ducks and Geese) - Aerial Surveys

Date	Total	Date	Total	Date	Total
03/19/93	400	01/06/97	0(frozen)	12/04/99	1,160
04/04/93	20,100	03/03/97	39,010	12/04/99	1,160
09/03/93	150	09/09/97	4,800	01/07/00	300
01/09/94	1,040	10/02/97	29,100	02/04/00	700
02/25/94	16,300	10/16/97	2,500	02/18/00	18,710
09/02/94	6,950	01/07/98	830	03/07/00	22,600
03/02/95	7,300	02/26/98	3,520	04/21/00	8,400
04/14/95	20,100	03/18/98	24,020	09/05/00	7,710
09/07/95	35,160	04/20/98	13,100	0915/00	12,460
09/19/95	104,700	09/02/98	3,790	09/27/00	5,090
10/04/95	54,900	09/30/98	24,400	10/10/00	15,830
10/25/95	4,180	10/12/98	5,300	10/25/00	540
11/01/95	5,210	10/28/98	10,130	11/07/00	2,960
11/22/95	21,800	11/16/98	16,900	11/22/00	0 (frozen)
01/22/96	470	12/11/98	1,560	01/13/01	0 (frozen)
02/05/96	980	01/04/99	470	02/14/01	0 (frozen)
03/03/96	3,400	03/01/99	21,630	03/08/01	34,700
03/21/96	32,370	03/15/99	19,280	03/25/01	31,700
09/03/96	13,800	09/07/99	3,240	09/06/01	4600
09/19/96	8,500	09/22/99	22,200	09/21/01	18,760
10/03/96	14,400	10/05/99	0	10/24/01	500
10/16/96	6,400	10/20/99	4,660	01/04/02	120(frozen)
10/30/96	4,500	11/02/99	3,400	01/30/02	0 (frozen)
11/06/96	4,500	11/15/99	8,200		

Neotropical Migratory Bird and Yellow Rail Surveys

Introduction

Collection of baseline data by the Bureau of Land Management was completed in 1997; however, monitoring efforts for neotropical migratory birds conducted by the Pacific Southwest Research of the U.S. Forest Service and the Klamath Bird Observatory continued in 2001. This data is collected at the "Monitoring Avian Productivity and Survivorship" (MAPS) site. The MAPS site at Wood River is one of many in the Upper Klamath Basin and surrounding area, which includes several along the west side of Upper Klamath Lake. The goal of the collective sampling at several sites is to evaluate the reproductive success and population health of neotropical migratory birds and to maintain a long term monitoring effort for tracking population trends. This study is being conducted under a cooperative agreement between the Bureau of Land Management, Pacific Southwest Research, the Klamath Bird Observatory, and several other partners.

The Nature Conservancy has conducted surveys for yellow rails on the property where restoration work has been completed. In addition, mid-winter bald eagle counts have been conducted by BLM personnel on the property for the past four years.

Methods

Sampling at the MAPS site at Wood River is intended to collect data on reproductive success, use of the area during fall migration, and overall trend for neotropical migratory birds. The methods involved for monitoring under this study include mist netting, point counts associated with the mist net site during the breeding season, and area search at the mist net site during fall migration. The site is sampled from mid-May through the end of October.

Yellow rail surveys are conducted at night in preferred habitat types to locate territorial males. Males are captured and banded where it is feasible to do so. Nest searches take place during the day in suitable habitat within likely breeding territories.

Mid-winter counts for bald eagles are conducted annually on a nationwide basis during target dates in January. The route at Wood River consists of a six-mile route around the perimeter of the property.

Results and Discussion

Neotropical Migratory Birds - The total number of bird species captured through mist netting at Wood River during the 2001 breeding season was 37. The six most common of those captured during the breeding season, in order of abundance, were the song sparrow, red-winged blackbird and yellow warbler, American robin, willow flycatcher, and tree swallow (Table 6). The total number of bird species captured during the fall migration season was 34. The five most common of those captured during the fall migration, were in order of abundance, the yellow-rumped

warbler, song sparrow, orange-crowned warbler, hermit thrush, and yellow warbler (Table 6). The song sparrow and yellow warbler have been detected annually during the breeding season since surveys began in 1995. The song sparrow is a year-round resident. The yellow-rumped warbler and hermit thrush likely utilize the area only during their migration. These two species nest in coniferous forests.

Table 6. Relative abundance of landbird species captured at Wood River (1997 – 2001).

Bird Species (Breeding Season)	**1997**	**1998**	**1999**	**2000**	**2001**
Song sparrow	1	1	1	1	1
American robin	2	2	2	3	3
Red-winged blackbird	4	3	3	4	2
Yellow warbler	5	3	4	5	2
Brown-headed cowbird	3	4	5		
Marsh wren				2	
Wilson's warbler		5			
Willow flycatcher					4
Tree swallow					5
Bird Species (Fall Migration Season)	**1997**	**1998**	**1999**	**2000**	**2001**
Yellow-rumped warbler	1		1	1	1
Hermit thrush	2	1	5	2	4
Song sparrow	5	2	2	5	2
Orange-crowned warbler	3	3			3
Marsh wren			4	3	
Lincoln sparrow			3	4	
Ruby-crowned kinglet	4			4	
Fox sparrow		5	5		
Varied thrush		4			
Yellow warbler					5

(Data was collected by the Klamath Bird Observatory and Redwood Sciences Laboratory, U.S. Forest Service.)

A total of 179 bird species were documented at Wood River as of February 2002 (Table 7). This list includes species detected during the MAPS study. Several species not previously documented at Wood River were found during the summer and fall of 2001. One of these species, the black-and-white warbler, has been recorded fewer than six times in the Klamath Basin (Summers 1993).

The data presented above is preliminary and no conclusions on the relative importance of the Wood River Wetland for neotropical migratory birds (as compared to other sites along Upper Klamath Lake), or overall trend for these birds, is available at this time. However, later this year a report synthesizing the five years of constant-effort mist netting data will be compiled. This

report will address demographics, reproduction, and provide a comparison of the relative importance of the Wood River site for landbirds compared to similar sites in the Upper Klamath Lake area.

Table 7. List of All Bird Species (Total = 179) Documented at the Wood River Wetland as of February 2002.
(*Species not previously documented at Wood River, which were detected during 2001.)

American avocet
American bittern
American coot
American crow*
American goldfinch
American kestrel
American redstart
American robin
American white pelican
American widgeon
Bald eagle
Barn owl*
Barn swallow
Belted kingfisher
Black-&-white warbler*
Black-billed magpie
Black-capped chickadee
Black-crowned night heron
Black-headed grosbeak
Black-necked stilt
Black tern
Blue-winged teal
Bonaparte's gull
Brant
Brewer's blackbird
Brown creeper
Brown-headed cowbird
Bufflehead
Bullock=s oriole
Bushtit*
California gull
California quail
Canada goose
Canvasback
Caspian tern
Cassin=s vireo
Cedar waxwing
Chestnut-backed chickadee
Chipping sparrow
Cinnamon teal
Clark's grebe
Cliff swallow
Common barn owl
Common loon
Common merganser
Common nighthawk
Common raven
Common snipe
Common yellowthroat
Cooper=s hawk
Dark-eyed junco
Double-crested cormorant
Downy woodpecker
Dusky flycatcher
Eared grebe
European starling
Evening grosbeak
Ferruginous hawk
Forster's tern
Fox sparrow
Franklin's gull
Gadwall
Golden-crowned kinglet
Golden-crowned sparrow
Goldeneye
Grasshopper sparrow
Great blue heron
Great egret
Great horned owl
Great-tailed grackle
Greater scaup
Greater white-fronted goose
Greater yellowlegs
Green-backed heron
Green-tailed towhee
Green-winged teal
Hammonds= flycatcher*
Hairy woodpecker
Hermit thrush
Hermit warbler
Hooded merganser
Horned grebe
Horned lark
House finch
House wren
Killdeer
Lazuli bunting
Least flycatcher
Least sandpiper
Lesser goldfinch*
Lesser scaup
Lesser yellowlegs
Lincoln=s sparrow
Loggerhead shrike
Long-billed dowitcher
Long-eared owl
MacGillivray's warbler
Mallard
Marsh Wren
Merlin
Mountain bluebird
Mountain chickadee
Mourning dove
Nashville warbler
Northern flicker
Northern harrier
Northern pintail
Northern rough-winged swallow
Northern saw-whet owl
Northern screech owl*
Northern shoveler
Northern shrike*
Olive-sided flycatcher
Orange-crowned warbler
Osprey
Peeps
Peregrine falcon
Pied-billed grebe
Pine siskin
Prairie falcon
Purple finch
Pygmy nuthatch
Red-breasted nuthatch*
Red-breasted sapsucker
Redhead
Red-naped sapsucker
Red-tailed hawk
Red-winged blackbird
Ring-billed gull
Ring-necked duck
Ross= goose
Ruby-crowned kinglet
Ruddy duck
Sandhill crane
Savannah sparrow
Say=s phoebe
Sharp-shinned hawk
Short-billed dowitcher
Short-eared owl
Snow bunting
Snow goose
Snowy egret
Song sparrow
Sora
Spotted sandpiper
Spotted towhee
Stellar=s jay
Swainson=s thrush
Townsend=s solitaire*
Tree swallow
Tri-colored blackbird
Tundra swan
Turkey vulture
Varied thrush
Violet-green swallow
Virginia rail
Warbling vireo
Western flycatcher
Western grebe
Western kingbird
Western meadowlark
Western sandpiper
Western tanager
Western wood-pewee
White-breasted nuthatch*
White-crowned sparrow (gambelii)
White-throated sparrow
White-faced ibis
Willow flycatcher
Willet
Wilson's phalarope
Wilson's warbler
Winter wren
Wood duck
Yellow-breasted chat
Yellow-headed blackbird
Yellow rail
Yellow-rumped warbler
Audubon=s warbler
Myrtle warbler
Yellow warbler

Yellow Rail

A total of ten surveys of the Wood River Wetland were conducted in 2000. Two rails were detected on May 6 and three were detected on the May 15 visit. One of these birds was banded. No other birds were heard calling on the remainder of the site visits. This compares to 6 rails heard in 1998 and 7 rails heard in 1999. Lower water levels were observed in 1999 and 2000 as well as a shorter duration of flooding. There were also different observers in 2000 than in previous years. This information was taken from an annual report on yellow rail monitoring that is produced by The Nature Conservancy in cooperation with U.S. Fish and Wildlife Service, Winema National Forest, Oregon Department of Fish and Wildlife and BLM. Copies of this report can be obtained by contacting the Klamath Falls Resource Area of BLM. The survey for yellow rails was repeated in cooperation with The Nature Conservancy in the 2001 and 2002 field seasons.

Bald Eagle

1998-2002

Mid-winter bald eagle counts were conducted during 1998 and 1999. Mid-winter counts are conducted annually on a nationwide basis during target dates in January. The route at Wood River consists of a 6-mile route around the perimeter of the property. In 1998, five immature bald eagles and one adult bald eagle were observed along the route. In 1999, two adult bald eagles and two immature eagles were documented. In 2000, three immature bald eagles and two adult bald eagles were observed along the route. In 2001, four adult bald eagles and two immature bald eagles were observed. In 2002, two mature bald eagles and two immature bald eagles were observed. Bald eagles also have been frequently observed hunting at Wood River during the spring and summer months.

Future Monitoring

The MAPS study of neotropical migratory birds by the KBO and RSL, and the surveys of yellow rails by The Nature Conservancy, will continue as funding is available. Bald eagle mid-winter counts will continue indefinitely. Monitoring of landbirds by BLM using point counts will resume once there is a minimum of three years of vegetative growth subsequent to the completion of the restoration. The restoration was completed in the late fall of 1999 in the areas where baseline monitoring stations were established for landbirds. In the spring of 2003, the degree of vegetation changes and general bird presence will be evaluated to determine if it is appropriate to initiate monitoring.

Vegetation

Data were collected from 30 vegetation monitoring plots on the Wood River Wetland property during 1999. Twenty of the plots were originally established in 1995, and 9 plots were first

established in 1996 to complete the planned plot design for vegetation monitoring. One new plot was established in 1999 within the riparian wetland created by filling a portion of the dredged Wood River channel. This completed the initial monitoring for vegetation change following the establishment of restoration water levels in the interior of the Wood River Wetland in 1998, and established baseline data for monitoring vegetation change within the created riparian wetland. Therefore, no vegetation monitoring plots were sampled during 2001.

The monitoring plan contained in the Upper Klamath Basin and Wood River Wetland RMP/EIS called for vegetation monitoring every three to five years after the collection of baseline data. Therefore, vegetation data will next be collected in 2002. A list of plant species that have been identified on the Wood River property is available in the botany files at the Klamath Falls Resource Area office.

Riparian Resources

Photo Points

Photos were taken at the 12 established photo points along the Seven Mile dike and the Wood River (see Figure A). The riparian photo points are located approximately 1000 meters apart. At each point four photos are taken, one in each of the four cardinal directions (North, South, East, and West) using a compass to determine the direction. During 1998, an additional photo point was established at a location known as Wedge's Pond in the northeast corner of the property. The photos are taken during the middle to end of June.

The photo points were first taken in 1995, the first year after livestock were removed from the property. In reviewing the photos, there is an obvious increase in the total amount of vegetation present in succeeding years. The 1995 photos show patches of bare ground that are no longer evident in the 2001 photos. There has been a noticeable increase in the density and size of several species including cattails, reed canarygrass, and willows. Some of the photos along the Wood River show the newly expanded flood plain as evidenced by the higher water levels. These photo points will continue to be valuable as water levels and channel configurations are manipulated. Vegetation amounts and species composition will also likely change with the shifting moisture regimes.

The location of the photo points and copies of the photos are located in the Wood River Photo Points binder located at the Klamath Falls Field Office.

These photos will be retaken in 2002. Additional photo points may also be added along the south dike and the Petric dike.

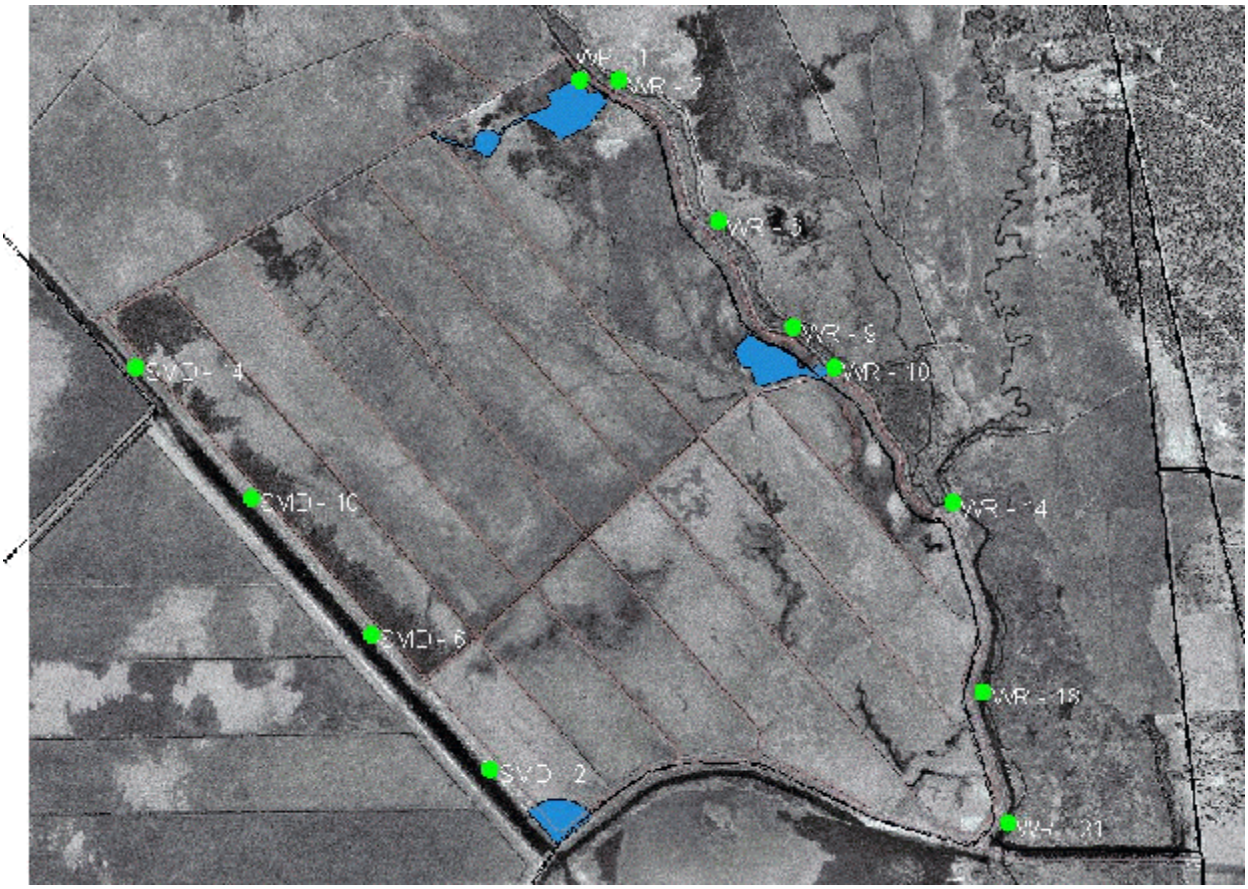


Figure A. Vegetation monitoring photo points

Water Quality

Wood River channel temperature

Methods: Water temperature data loggers were deployed at two stations in 1997 (North Boundary Station and Bottom of Project Station - Figure B). A third water temperature station was added in 1998 below the confluence of Crooked Creek. Both data loggers upstream of Dike Bridge malfunctioned in 2001 and therefore it was not possible to measure stream warming through the project reach. The objective of these data loggers was to accurately measure how the narrowing and deepening of the Wood River affects the rate of stream warming through the project reach. The first major change in surface area occurred in October 1998 when surface area was reduced from 36 acres to 26 acres (Figure C). The second change occurred in mid-August, 1999 when surface area was reduced from 26 acres to 17 acres. Calibration and deployment of temperature loggers followed methods described in *"Water Quality Monitoring Technical Guide Book, Oregon Plan for Salmon and Watersheds, 1999*".

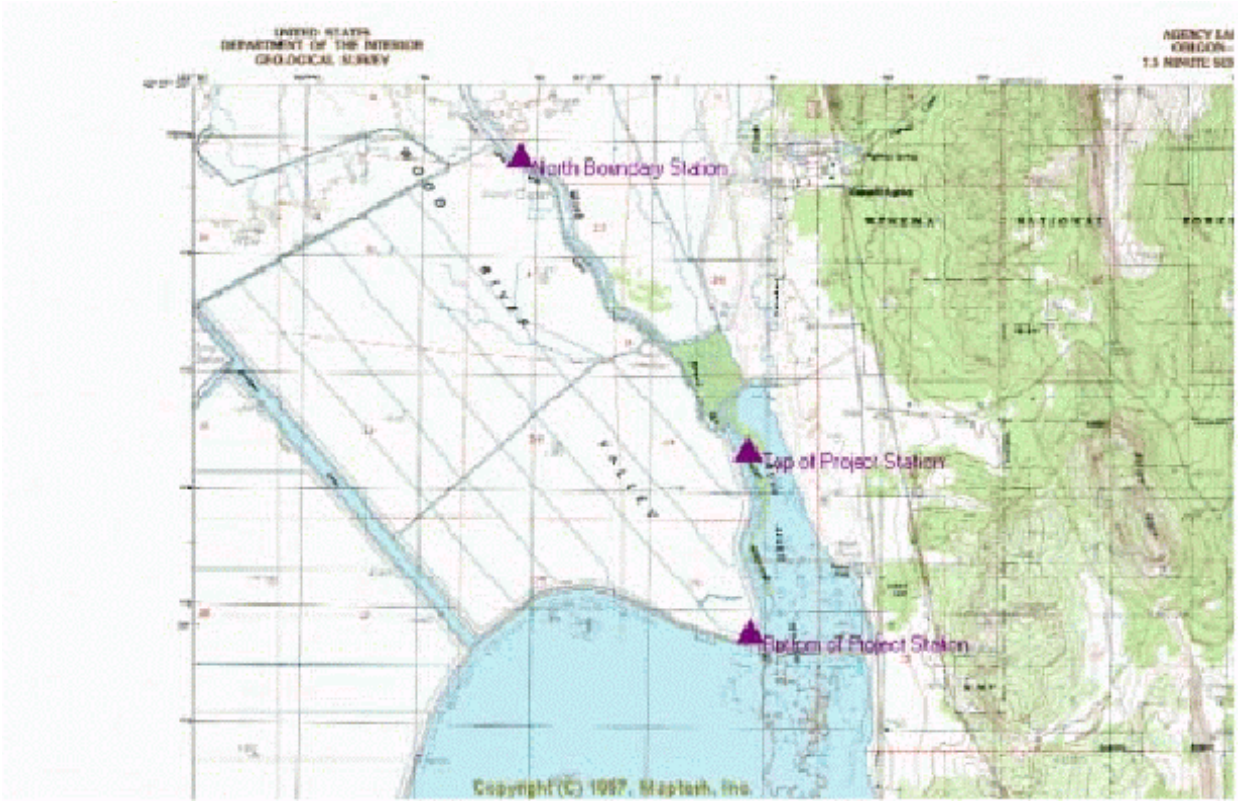


Figure B: Map of water temperature monitoring points. Warming is measured between "North Boundary Station" and "Bottom of Project" (Weed Rd).

Results: Refer to 2000 monitoring report for analysis of changes in stream warming rates that occurred between 1997 and 2000. Seven day average maximum temperatures at Dike Bridge in 2001 are plotted in Figure C. Maximum temperatures are generally higher than previous years, likely because of low flows in the Wood River were low compared to the previous 4 years (Figure D).

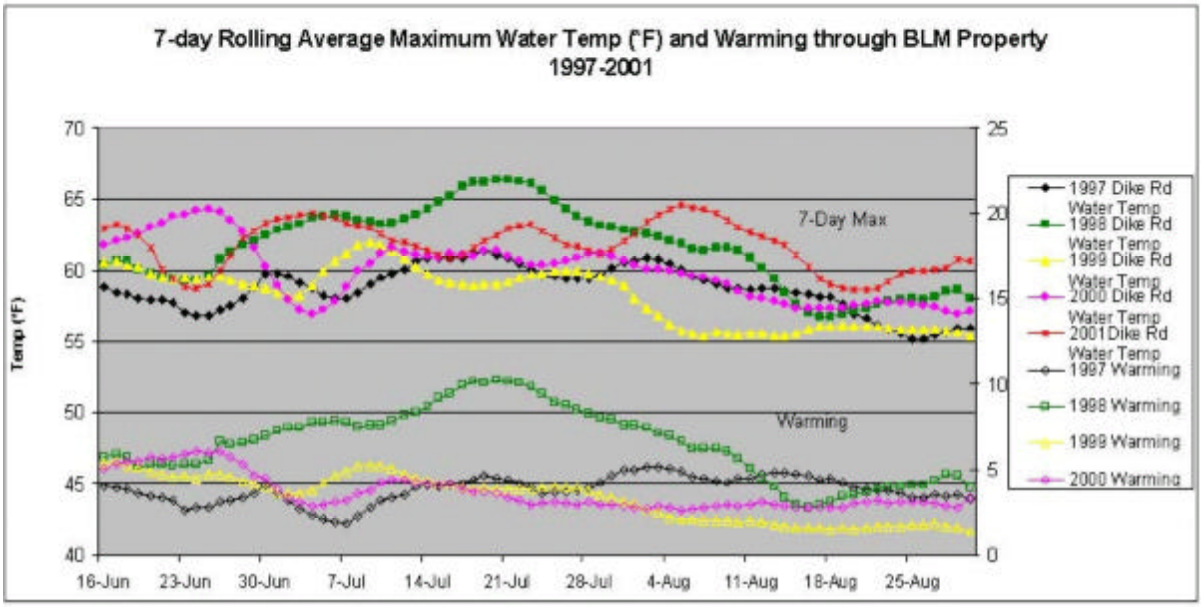


Figure C: Daily maximum temperatures at Wood River outlet (top) and daily warming (bottom).

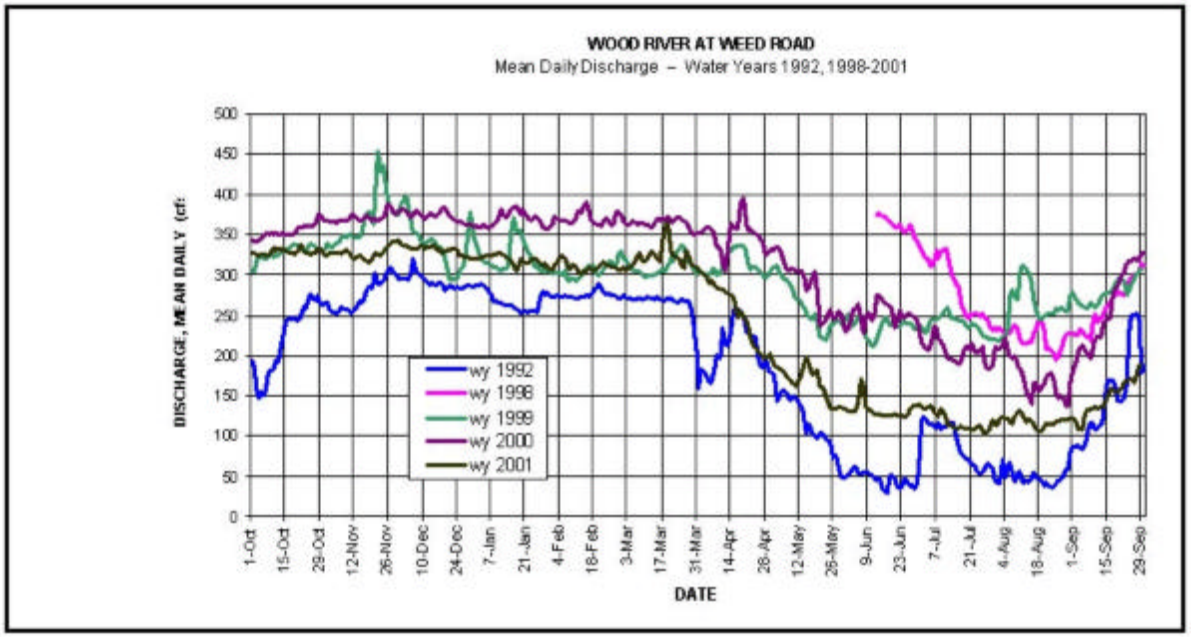
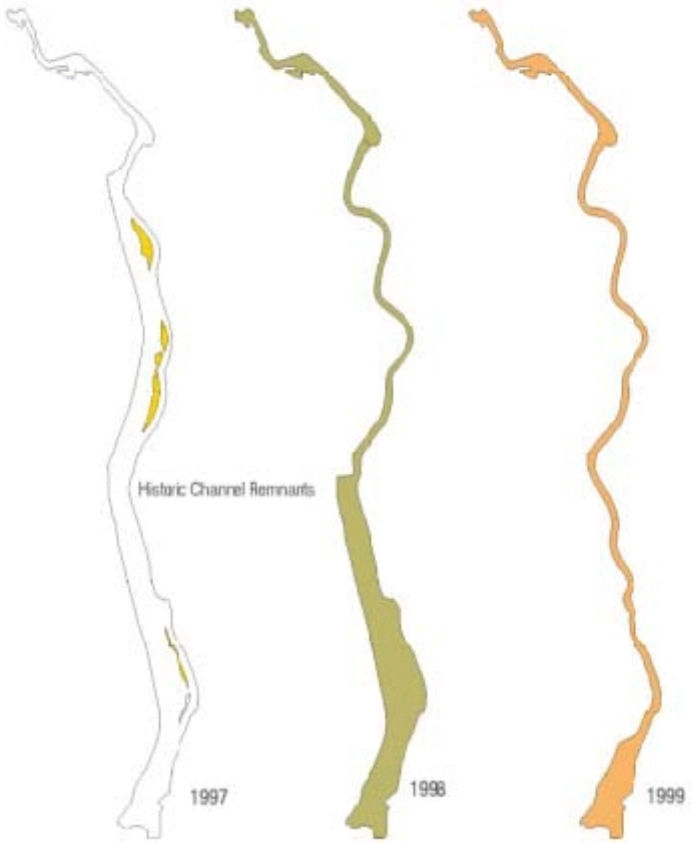


Figure D: Flows for water years 1998-2001 at Weed Road gage and flow for 1992, a record low water year.

Figure E: Change in water surface area after 1998 and 1999 re-construction.



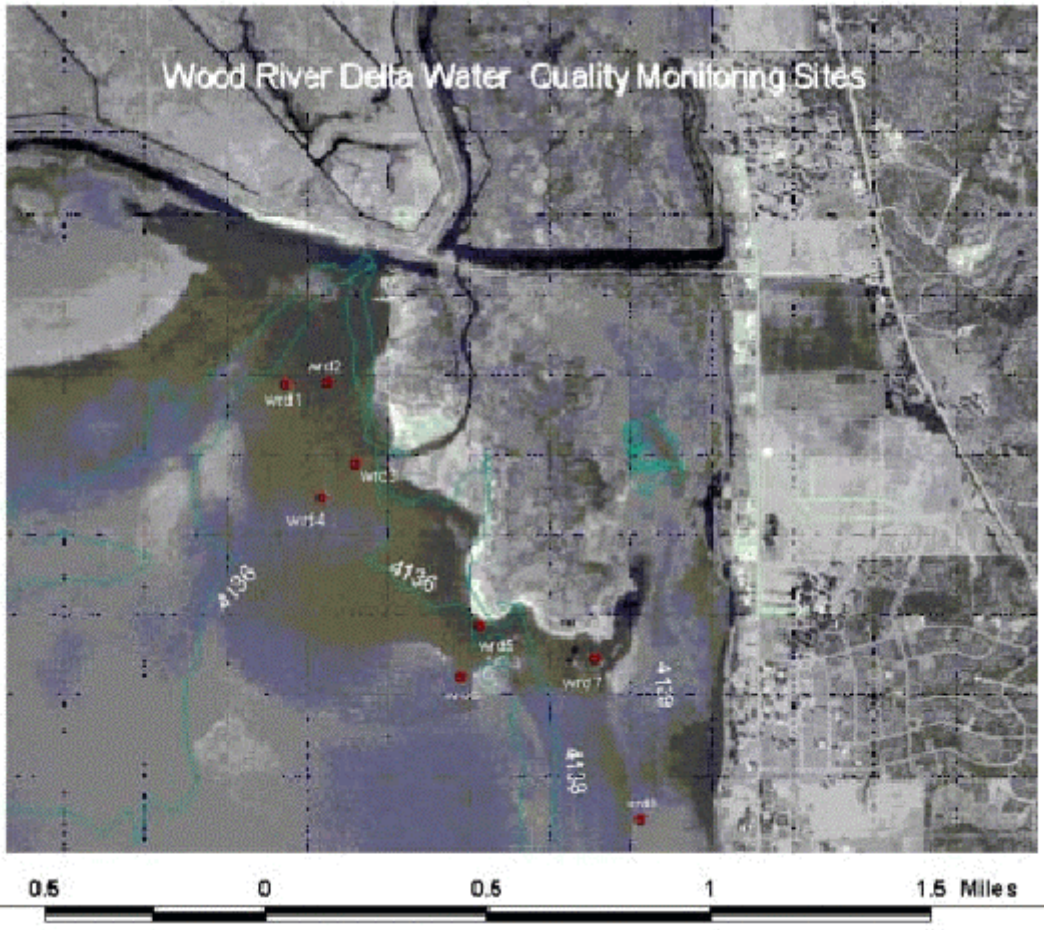
	1997	1998 (October)	1999 (August)
AREA (sq.ft.)	1,568,154	1,172,112	714,115
AREA (acres)	36.00	26.91	16.39
Mean width (ft)	238.6	154.5	84.7

Temperature Monitoring 2002:

Temperature monitoring in the Wood River Channel will be repeated using the same methods as in previous years. 2002 data will be used to further validate results.

Wood River Delta Water Quality

Figure F: Map of Water quality and temperature logger station locations, Wood River



Delta.

Methods: Starting in summer, 2000, water temperature data loggers were deployed at eight stations in Agency Lake in an array around the existing Wood River Delta to assess effects of channel outlet relocation on water quality. Additionally, hydrolab water quality samples were taken at weekly intervals at the temperature monitoring stations during August at the eight stations between 10 and 12 AM. Surface and bottom profiles were obtained. Hydrolab data included temperature, dissolved oxygen, pH, and conductivity. Temperature data from continuous data recorders has not been analyzed and will be presented in future reports.

Results: Depths of initial deployment ranged from 2.7 meters to 1.7 meters. Figure (e) shows the location of temperature and water quality sample points.

2000 results: Oxygen depletion was apparent at sites 1,2,5,6 and 7 but never reached below 5.5 mg/l (less than 4 mg/l is considered lethal for most fish species). However, measurements were taken well after the time of day that photosynthesis would be expected to have increased O_2 levels. Measurements of pH reached levels above 9.0 (max 9.6 at wrd_7) at all sites except wrd_3, nearest to the mouth of the Wood River. However, bottom pH exceeded 9.0 only at sites 5,6,7, and 8.

2001 results: When data from all eight stations are combined, pH and dissolved oxygen were generally lower in 2001 than in 2003, whereas temperature remained relatively similar between years. Variations at individual sites show influences of redirecting flow towards stations 5,6, and 7 and away from 2,3, and 4.

Monitoring 2002: Methods and timing will be identical to the 2001 effort to allow for comparison between years. This will allow for an assessment of effects of channel relocation on water quality at the selected locations. Of particular interest will be the effect of channel relocation on site wrd_8, which is approximately 1/4 mile south of the delta near the east shore. Anecdotal accounts indicate that water quality in this region was much better before dredging occurred in the delta. Hydrolab water quality measurements will also be taken at weekly intervals in July since this is usually the time of year that water quality conditions are most severe and limit available fish habitat.

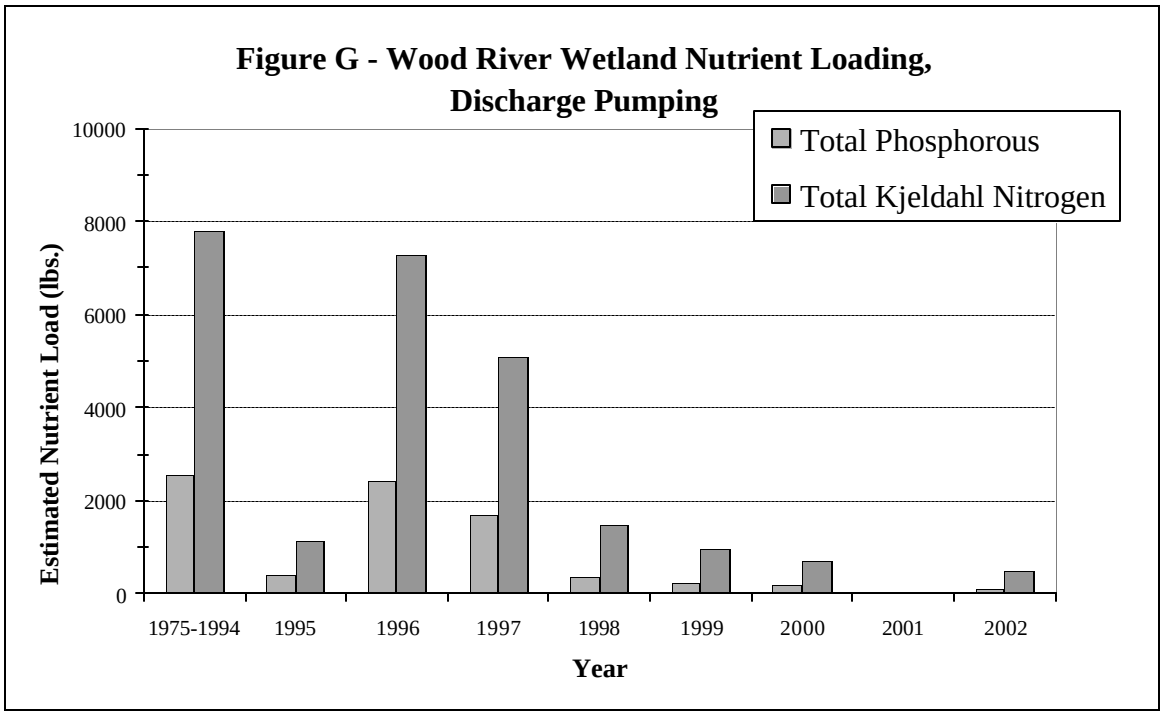
Nutrient Loading

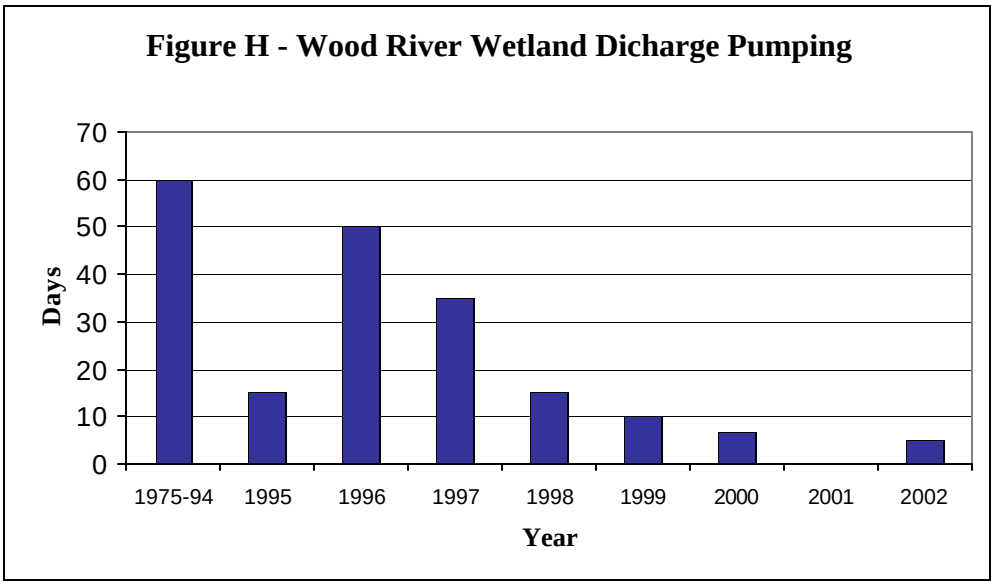
At two sites in the Wood River Wetland, the concentrations of total phosphorous (TP) and total Kjeldahl nitrogen (TKN) were measured from 1993 to 1995 (Snyder and Morace, 1997) and from 1999 to 2000 (Rykbost and Charlton, 2001). A total of 44 samples were taken at the pumps that discharge into Sevenmile Canal and the Wood River.

At both sites, the concentration of TP was lower in 1999/2000 than it was in 1993/1995. TKN concentrations decreased slightly at the Sevenmile site but increased at the Wood River site. Because of these decreased concentrations, and because much less water is pumped from the wetland under its current management program, the total load of TP and TKN delivered to Agency Lake has decreased drastically. Delivery of nutrients to Sevenmile Canal has been eliminated (with the possible exception of minor seepage), and delivery of TP and TKN to the Wood River has been reduced by 82% and 73% respectively. (See Table 8 and Figures G and H below.)

Table 8: Nutrient Concentrations and Loading at Two Pump Sites in the Wood River Wetland.

					Nutrient Concentration (mg/l)		Load Delivered to Agency Lake (lbs)	
Sample Location	Sample Years	Number of Samples	Average Pump Rate (cfs)	Duration of Pumping	Total Phosphorous	Total Kjeldahl Nitrogen	Total Phosphorous Load	Total Kjeldahl Nitrogen
Sevenmile Canal	1993-1995	6	20	60	0.93	3.3	1241.1	4403.9
	1999-2000	22	N/A	0	0.49	3.0	0.0	0.0
Wood River	1993-1995	6	20	60	0.98	2.7	1307.8	3603.2
	1999-2000	10	25	10	0.86	3.5	239.1	973.1





FISH POPULATION MONITORING

- Interior wetland - Sampling of fish populations within the interior wetland. The objective is to gather baseline information on fish abundance and distribution as habitat changes over time.

- Wood River larval and juvenile out-migration - This included sampling with a shoreline orientated trap net and fishing with drift nets and Fyke nets off the Dike Road bridge. The objective is to gather baseline information on timing of early life stages and species presence of suckers and trout in the project area.

- Channel Construction Salvage - Data presented here includes capture data from efforts to collect fish that would be harmed from channel construction activities. The goal was to collect and move all fish before dredging and filling (except fathead minnows) and move them into un-impacted areas of the Wood River.

Interior Wetland: Gear deployed to sample fish presence within the interior marsh consisted a single ½ inch mesh trap net with a 100 foot lead extension. Traps were set for two nights each at two pond habitat sites between July 9, 1998 and August 6, 1998. The ponds were created from the removal of borrow material for dike building in 1996 and 1997. The ponds are located near the northeast corner the property and near the Wood River pump station. Shoreline vegetation at these sites is relatively sparse consisting mostly of recently colonized willow, *Potamogeton*, aquatic smartweed and scattered bullrush. Average and maximum depths are approximately three feet and five feet respectively. Little or no emergent vegetation was noted and bottom substrate was a mixture of peat and pumice sand. All of the fish sampled except the chub species are introduced species to the Klamath Basin.

1999 Fish Salvage

The construction sequence for the Wood River channel restoration work resulted in the flowing water to be contained within a channel that was designed to replicate the historic dimensions of the river (approximately 50' wide and 6'-8' deep). The restoration design called for the previously dredged channel to be filled to an elevation approximately the same as the original flood plain. Prior to the fill work beginning, the area to be filled was partitioned into segments, and fish remaining in these isolated segments were captured and returned to the river (salvaged). The following table displays the results of that salvage effort, and required 137 person hours to complete. During the salvage, backpack electro-fishing and dip nets were used to capture fish. Non-native fathead minnows were the most abundant fish present, and were not salvaged.

Table 9 Date	Redband Trout	Sucker sp.	Yellow Perch	Speckled Dace	Tui Chub	Blue Chub	Sculpin sp.	Lamprey sp.
7/27/99	1	1	1		4		14	2
7/29/99	2	6	2		55	20	6	
8/26/99	3	2	11	1	11		20	1
8/31/99	11	6	20		17	33	25	
9/1/99		35	52		236	112	9	1
9/7/99		123	165		250	198	36	1
9/8/99		54			369	280	15	1
9/9/99		17	24		102	124	2	
913/99	1	68	165		190	133	38	2
9/14/99		39	311	1	130	148	56	4
TOTAL	**18**	**351**	**751**	**2***	**1364**	**1048**	**221**	**12**

***** The numbers of speckled dace and other species (young of the year size classes) are under estimated, because fish that appeared to be fathead minnows during the electro-fishing, were not netted for salvage.

Fish Trapping

A technical team of experts in fisheries biology, geomorphology, and engineering has been meeting during the past two years to design and coordinate the river channel restoration project. The timing of the out-migration of young fish from the river to the lake was identified as information that would help minimize the short term impacts of the construction work associated with work planned for the summer and fall of 2000. A rotating drum screw trap was obtained through the cooperation of U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation, Oregon Department of Fish and Wildlife the Klamath Tribes and Oregon Trout. The trap was placed approximately one mile upstream from the entrance road bridge. Table 9 displays the results of running the trap

from August through December of 1999. Trapping efforts will continue over the next two years.

The screw trap was floated in the Wood River for all of 2000, however lake elevation and high debris load prevented operation of the trap a large portion of the year. The trap collected fish for 90 days. Operation during late spring and most of the summer was precluded due to lack of flow at trap site as a result of lake elevation. Most other days without fish capture were related to debris stopping trap operation and thus preventing trapping of fish.

Total number of fish captured in the trap was 2452 (Figure I). The dominant fish species captured was redband trout (*Onchorhynchus mykiss sp*.), accounting for nearly half (n=1134) of the total fish captured. At least thirteen fish species were captured in the trap, some sculpins and all lampreys were not identified past genus level.

Redband trout movement peaked on April 14, 2000, with 143 animals captured (Figure J). Based on the numbers collected from the trap, redband trout peak movements occurred in early March (peak number = 66), mid-April (peak number = 143), and middle to late September (peak number = 88).

One shortnose sucker (*Chasmistes brevirostris*) was captured during FY 2000 operations. Lip morphology clearly indicated a positive shortnose identification. Length of the shortnose sucker was 87 millimeters. No other suckers were captured in 2000.

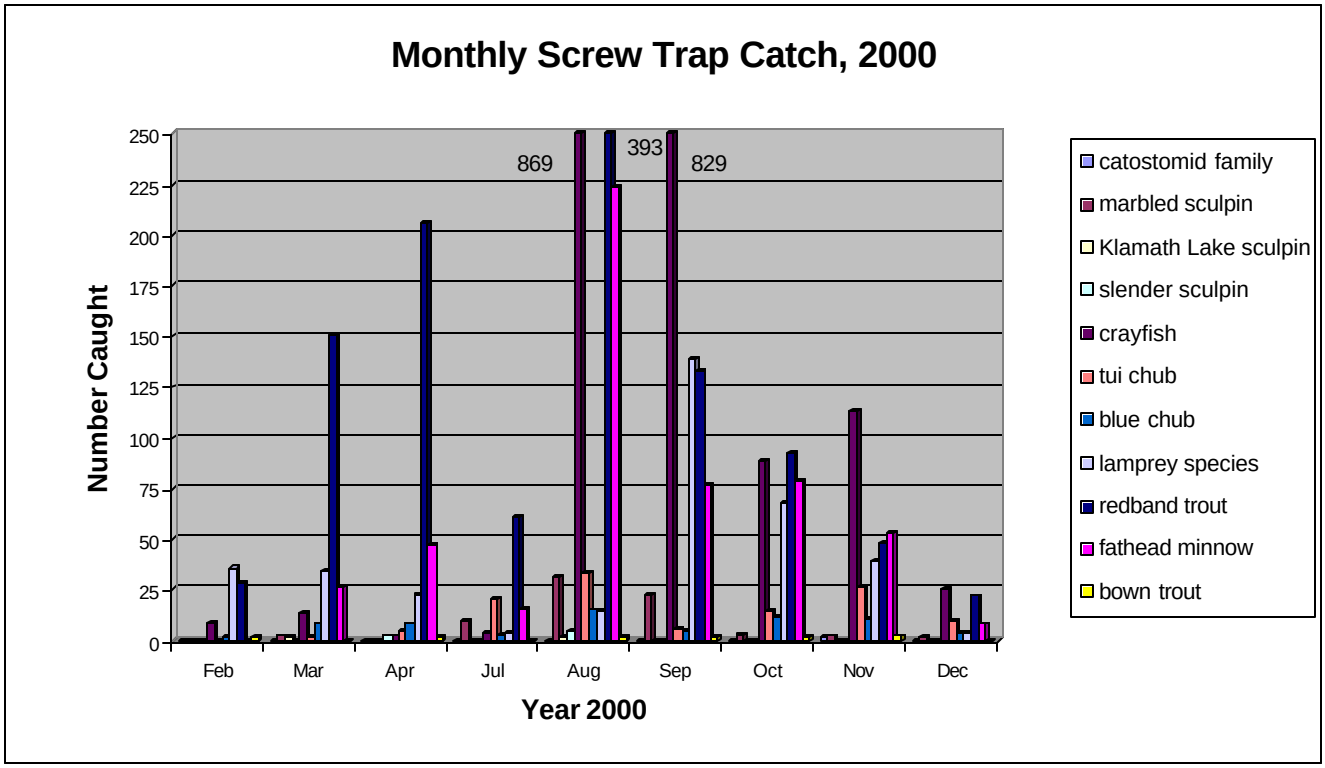
Pulses of increased crayfish and lamprey capture were noted FY 2000 (Figure I). From mid-September to the end of October 1,834 crayfish were captured in the trap. This accounted for 87% of the crayfish capture FY 2000. Lamprey pulses were also noted to occur during trapping operations. The peak migration of 78 lampreys was captured on October 21, 2000. Average capture rate for lampreys across all days of fish capture was slightly more than 4 animals per day.

The peak numbers captured often accounted for a relatively large percent of total fish captured. Therefore, missing or hitting the peaks, due to debris or lack of flow, could result in a large sample error.

Comparisons between 1999 and 2000

The Wood River screw trap was installed and began operating in September of 1999. Data on fish movement in spring is not available for 1999. For comparative purposes data comparisons between FY 2000 and FY 1999 will be limited to fall operations, September 24 through December 31.

The Wood River screw trap collected fish for twenty more days in 2000 than 1999 (30 days in 1999, 50 days in 2000). High debris loads halted trap operation for parts of the analysis period in both years. Total number of fish captured in 2000 increased four fold from 1999 numbers (Figure I). Capture numbers of all species (except for sculpin,



yellow perch, and suckers) increased at least two fold in 2000. Sculpin capture increased in 2000, but only by 16 animals. Yellow perch captures were very low, FY2000 n=5 and FY 1999 n=4. Sucker numbers did not increase in 2000, for both years numbers were very low, FY 2000 n=1 and FY 1999 n=3.

Figure I: Total monthly catch by species for the Year 2000

[1] Data entry for 2000 screw trap data has not been verified by visual check of entered data as of 2/27/01. Therefore data summaries may be subject to change upon verification of screw trap data.

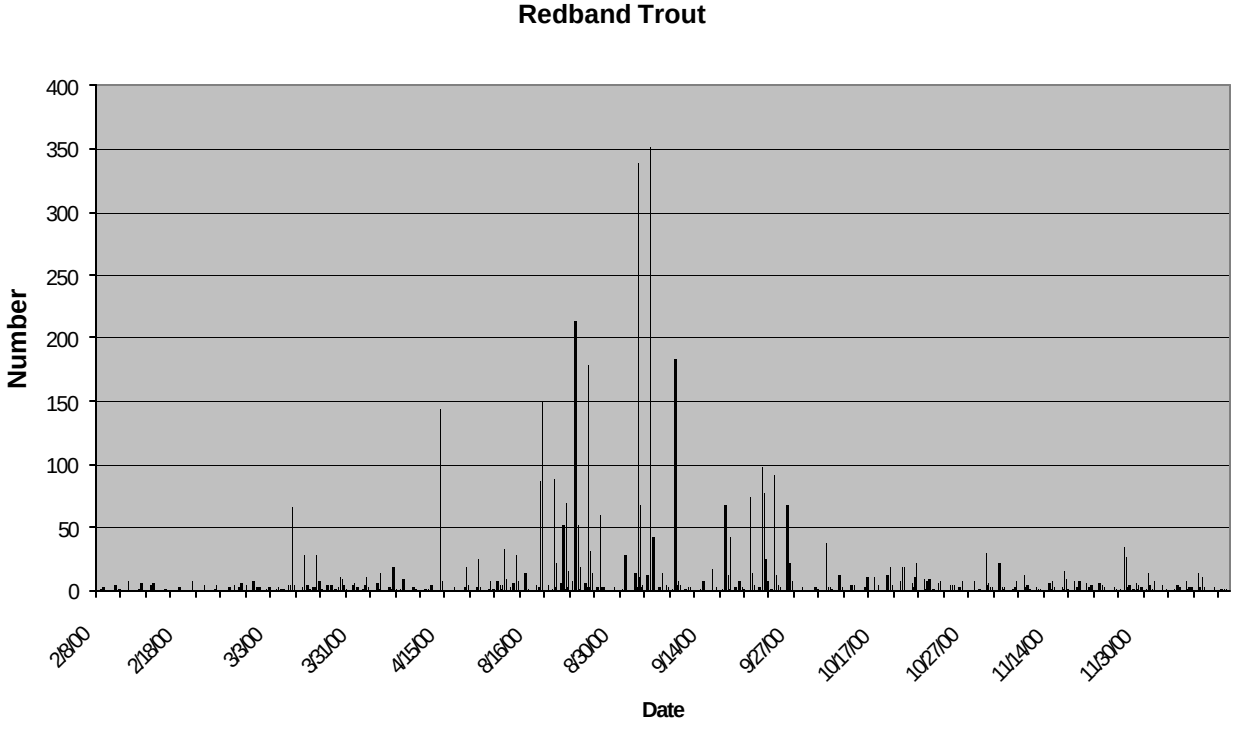
Increases in fish capture, between 1999 and 2000, are potentially related to improved channel characteristics as a result of channel scour and vegetative recovery along the river bank. The process of channel scour and bank vegetation recovery would concentrated flow into a more confined channel when water elevation is below bankfull. A confined channel would increase stream flow. Increased stream flow and a confined channel width would increased trap efficiency by turning the screw faster and increase the percentage of the water column sampled.

Better efficiencies could explain the increase in numbers. However other biological, as well as environmental, variables between years could also account for the increase. Increases in spawner recruitment from 1999 to 2000 could increase total numbers captured in the screw trap. Comparing ODFW spawning surveys and screw trap fish captures are recommended in the future

Species list of fish captured in Wood River screw trap for year 2000, including *scientific name* and common name.

Chasmistes brevirostris, shortnose sucker
Cottus klamathensis, marbled sculpin
Cottus princeps, Klamath Lake sculpin
Cottus spp., sculpin species
Cottus tenius, slender sculpin
Gila bicolor spp., tui chub
Gila coerulea, blue chub
Lampetra spp., lamprey species
Lepomis gibbosus, Pumpkinseed
Onchorhynchus mykiss spp., redband trout
Perca flavescens, yellow perch
Pimephales promelas, fathead minnow
Rhinichthys osculus, speckled dace
Salmo trutta, brown trout

Figure J: Daily redband trout catch, 2000.



SPOTTED FROG POPULATIONS

Oregon Spotted Frog Egg Mass Survey

Methods

Egg masses were enumerated using a visual encounter survey technique at the breeding site (Crump and Scott 1994) with a minimum of two visits to ensure a complete egg count (Thoms et al. 1997). Linear aquatic habitats (ditches, streams) and large, contiguous aquatic habitats (marshes, ponds) were surveyed by at least two persons slowly walking along the edge of the aquatic habitat, enumerating egg masses and documenting locations with correctable Rockwell Plugger and Trimble GeoExplorer GPS units and a datasheet (modified "Corn" form; Olson et al. 1997).

Results

This preliminary survey is not intended to be a comprehensive, detailed survey of the entire Wood River Wetland. Habitats were searched during 2 days from 29 March 2000 to 31 March 2000. Water and air temperatures were determined with a pocket thermometer. An egg mass site is defined as a site with at least one egg mass that is at least 4 m from another egg mass. Egg masses were recorded at 26 sites along the Wood River Ditch, a small parallel ditch and 3 sites in the northeast pond (Figure K). Egg mass numbers ranged from 1 to 29 egg masses per site. A total of 171 egg masses were enumerated within the Wood River Ditch and adjoining sites.

Discussion

This brief survey suggests the presence of a *Rana pretiosa* population on the WRW that is larger than previously thought and habitat previously believed unoccupied. Hayes (1994) surveyed representative portions of the WRW and did not report them from lower Wood River Ditch. BLM's survey in 1998 reported 106 frogs from the North Canal and the upper Wood River Ditch. Additional emergent wetlands and riparian wetlands, both public and private ownerships, along and east of the Wood River could be surveyed to document occupancy. Egg masses or adult frogs were not observed in lentic habitats that were darkly stained, although many such habitats appeared structurally similar to non-darkly-stained waters. Egg survival and recruitment in *Rana pretiosa* appears to be limited by nitrate and nitrite (Marco et al. 1999). A preliminary water quality analysis of nitrate-nitrite, pH, ammonia, and temperature concentrations could identify potential factors limiting habitat use by *Rana pretiosa*. Future surveys of adult frogs and tadpoles during the summer season is expected.

Bullfrog Removal

In May, an adult bullfrog and bullfrog tadpoles were discovered in a pond associated with the pump station adjacent to Wood River. An effort to remove tadpoles incorporating

nets, electrofishing, and trapping was conducted from mid-May through July. The results are displayed in Table 10.

Table 10: Results of Trapping for Bullfrog Tadpoles

Date	Bullfrog tadpole	Pump-kinseed	Tui Chub	Fathead Minnow	Yellow Perch	Brown Bullhead	Spotted Frog (Adult)	Lamprey sp.	Garter snake
May	1451	47	0	183	2	6	0	1	0
June	56	63	1	522	4	59	0	0	3
July	30	23	2	37	1	31	2	0	0
Totals	**1537**	**133**	**3**	**742**	**7**	**96**	**2**	**1**	**3**

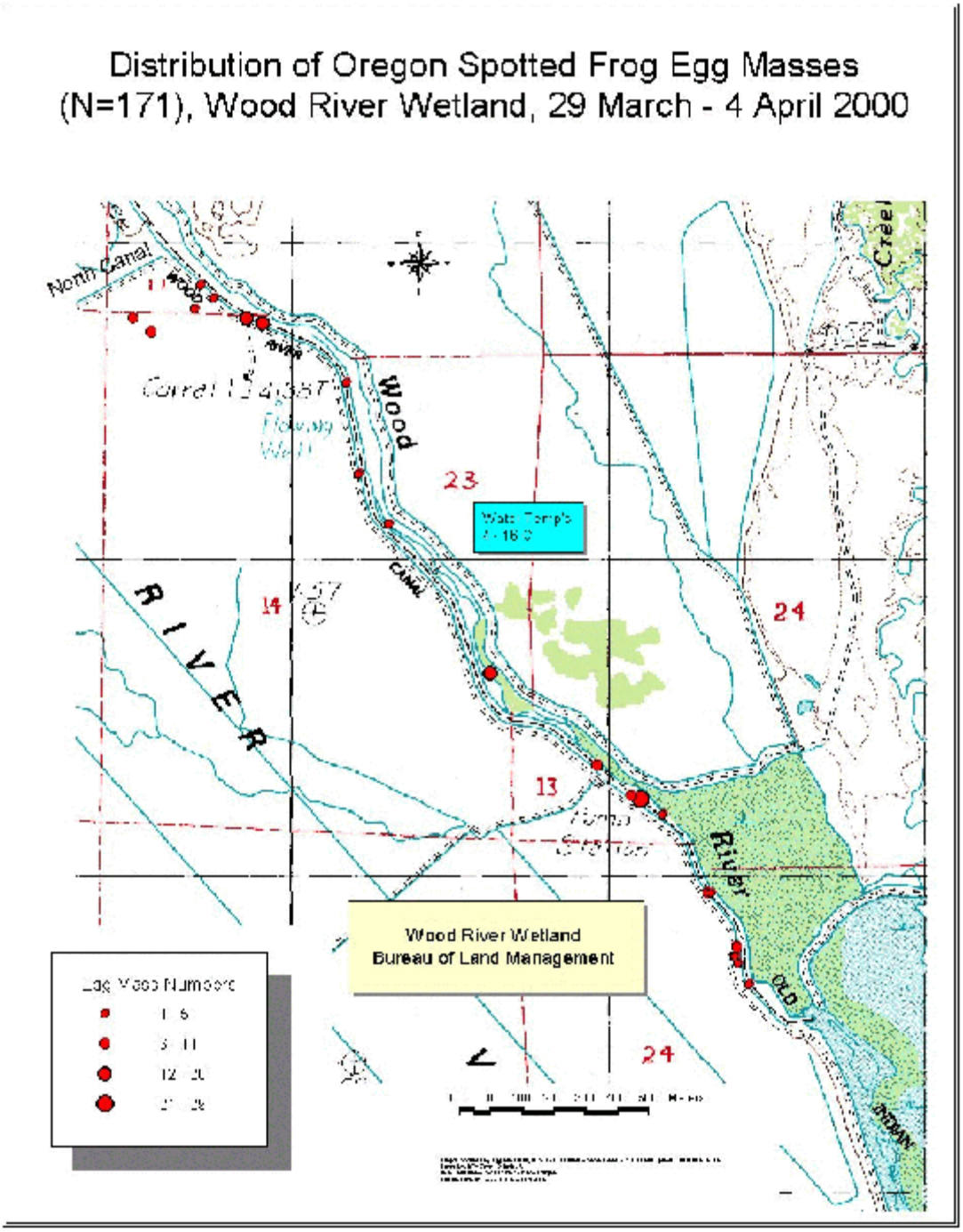


Figure K: Oregon Spotted Frog Egg Mass Survey

RECREATION

The Klamath Falls BLM conducted several different recreation monitoring efforts throughout 1999 and 2000. Through monitoring, the BLM is continuing to gain valuable information about the types and levels of recreation use occurring on the wetland property. As the recreation use pattern picture becomes clearer, the efforts in providing adequate and proper facility development become better defined.

Informal monitoring and observations of recreation visitors occurred on a fairly regular basis throughout the year by BLM employees visiting the wetland property. Additional monitoring occurs through more formal, personal contacts with visitors. Based on these informal observations and other monitoring, some general conclusions from the 1999 and 2000 recreation use season can be made: 1) The heaviest use of the wetland area occurs during the early season of waterfowl hunting. The opportunities for finding waterfowl and hunting success continue to improve, as the former pasture lands within the wetland property provided good cover and open water for waterfowl. 2) Use of the property by non-hunters (fisherman, sightseers, wildlife viewers, hikers, etc.) continues to greatly exceed use by hunters. 3) Use of the area during the non-hunting season increased over the same period in 1998, but overall year-round use remains light (estimated to average 5-6 visitors per day). 4) Average group size remains small, probably less than three individuals per group. 5) Local residents (Agency Lake area) represent the largest visitor group using the property on regular basis.
For 2001, the BLM will be working with the Native American Student Union of Oregon Institute of Technology to develop more formalized monitoring methods. A survey form will be developed and survey box will be installed to better monitor visitation.

A variety of outreach activities occurred at Wood River in 2000. Nine events took place, involving tours with various groups, including local high school teachers, elementary, high school and college students, and Ducks Unlimited. In addition, local Henley High School students participated in a workday where they planted trees and removed fences.

In 1999, a contract was completed for the design and fabrication of six interpretive display panels. The displays orient visitors, interpret wildlife, wetland function and other resources to visitors. The interpretive contract and trail work were partially funded with a wetland restoration grant received through the Klamath Falls Bureau of Reclamation. Also, several floating canal crossings were installed to facilitate access to the wetland area.

In 2000, a second contract was awarded for design and fabrication of an additional eight interpretive display panels. This second phase is designed to provide additional information to visitors regarding migratory birds, seasonal changes to the wetlands, the river restoration efforts and fishes of the Wood River area. In addition, an environmental education area is being designed, with additional informational panels highlighting historical, pre-historical and future uses of the area. This education area will provide a gathering area for local schools and public groups to study the wetland environment. A wetland loop trail system is also planned for the gathering area. These additional

developments are being funded by grants from the Oregon Watershed Enhancement Board and the U.S. Fish and Wildlife Service.

Additional facility development occurred in 2000. A floating canoe launch platform and gangplank were installed at the boat ramp area. A small storage building was constructed next to the restroom, for maintenance purposes. For 2001, the BLM plans to pave the existing trail leading from the parking area to the Wood River bridge area, to reduce the weed problem on the trail. Also, the BLM has entered into a volunteer agreement with a group of local volunteers called "The Usual Suspects", who will be caretakers for the recreation facilities and landscaping at Wood River.

VISUAL RESOURCES

The Wood River channel restoration project was completed at the end of year 2000. The areas next to the river that were re-vegetated in 1999 are recovering rapidly as willows, cattails and other vegetation becomes established. The wetland area continues to show significant improvement in scenic quality and is more naturally appearing now that the native vegetation is becoming established. It is expected that these improvement in scenic quality will continue as additional areas along the river are re-vegetated and the disturbed areas show recovery.

LANDS

Land Sales

When Congress instructed the Bureau of Land Management (BLM) to purchase the Wood River property, it also instructed the BLM to dispose of public lands in Klamath County to offset losses in property tax revenue that could occur from the acquisition. In 1998 the Klamath Falls Resource Area sold 1,600 acres of public land to the American Land Conservancy for the appraised fair market value of $625,400.00. The American Land Conservancy subsequently sold the property to the Jeld-Wen Corporation. The mineral estate, except for the oil, gas and geothermal resources, was also conveyed. In 2001, an additional 80 acres was sold for $10,000.00. The mineral estate, except for the oil, gas and geothermal resources, was also conveyed.

Lands Actions in Support of Restoration

Land surveys by the BLM Cadastral Surveyors were programmed for the summer of 1999. The surveys will identify small slivers private lands that need to be acquired to facilitate the completion of phase 3 of the Wood River channel restoration. Difficulties in the timing of construction work and the availability of the Cadastral Surveyors have delayed the survey until the 2001 field season.

GRAZING

The BLM is currently in the process of assessing all grazing allotments to ascertain if current grazing use is meeting the 5 Standards for Rangeland Health and meeting the Guidelines for grazing management (S&G's). This process is required by the grazing regulations resulting from the Bureau's "Healthy Rangelands" initiative (aka "Rangeland Reform '94"). An S&G assessment analyses existing information (i.e. rangeland monitoring studies or surveys, riparian studies, etc.) to characterize the general health of a grazing allotment within the framework of the 5 Standards for Rangeland Health. The 5 Standards are summarized as follows: Standard 1 - Watershed Function - Uplands; Standard 2 - Watershed Function - Riparian/Wetland Areas; Standard 3 - Ecological Processes; Standard 4 - Water Quality; and Standard 5 - Native, T&E, and Locally Important Species. The S&G's assessments identify if the Standards are being met and if not, the significant factors contributing to failure to meet Standards. The S&G's process is, by policy, currently directed at only livestock grazing.

The Wood River ROD/RMP states that "If and where appropriate, use livestock grazing as a vegetation management tool to support the primary goal of wetland restoration." Since 1994, livestock use has been considered incompatible with the ongoing wetland restoration activities and is expected to continue to be considered such in the foreseeable future. However, since the Wood River property is still a potential grazing allotment - and grazing could be used as a management tool - a S&G's assessment was scheduled and completed in FY00. Since no licensed grazing use has been authorized on the property since November 1994, livestock were not considered to be a factor in the current attainment or nonattainment of any of the 5 Standards. A copy of the Wood River property S&G's assessment is posted on the Klamath Falls R.A. website or is available upon request. (Wood River S&G's Assessment is available at following URL: **http://www.or.blm.gov/Lakeview/kfra/whatwedo/Range/Rangeland_Health/Assessment_WoodRiver.pdf** and must be viewed in Adobe Acrobat.)

CULTURAL RESOURCE MANAGEMENT

Thee BLM Cultural Resources Program continued to provide support for restoration activities conducted at the Wood River Wetlands during 2000. Activities largely concentrated on managing cultural resources encountered during restoration construction along the Wood River in 1998.

The National Historic Preservation Act, in addition to other laws and regulations, requires that potential impacts to cultural resources be addressed prior to and during the implementation of construction. Cultural resource surveys had been conducted along and near the Wood River prior to river restoration construction. Though no cultural resources were located during these surveys, four archaeological sites were encountered during phase I and II construction in 1998. Construction impacts were minimized at all four of these cultural sites.

Phase III Wood River restoration construction commenced in 2000. Phase III involved the dredging of more recently deposited sediments along the historic course of the Wood River downstream from the Agency dike bridge. It appeared unlikely that sites would be encountered along the confines of the historic river; however, the discovery of the four sites north of the Agency dike bridge in 1998 prompted an additional pedestrian surface survey in the phase III area. During this survey a fifth cultural site was found. Fortunately, the site's location was in an area that would not be impacted by phase III construction. No new sites were encountered during phase III restoration construction.

In addition to the river channel restoration construction, several locations were proposed for constructing duck nesting islands. A pedestrian surface survey was conducted in 2000 in response to this proposal. No cultural resources were found during the survey.

The Klamath Tribes have been active participants throughout this entire process. A Memorandum of Agreement between the Klamath Tribes and Oregon Trout had been previously signed which provided for monitoring support and the protection of cultural sites. Extensive monitoring by Klamath tribal members was conducted in 1998 and continued through 2000.

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